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BY THE HOUSE OF DELEGATES,
MARCH 29th, 1870.

Read and ordered to be printed.

By order,

M. Y. KIDD,
Chief Clerk.

A LETTER

ON

OYSTER CULTURE

FROM

PHILIP P. CARPENTER, B. A., PH. D., HONORARY CURA-
TOR OF MOLLUSCA IN MCGILL COLLEGE,
MONTREAL, CANADA.

TO THE

President of Peabody Institute, Baltimore.

ANNAPOLIS:
WM. THOMPSON, of R., PRINTER.

1870.

BY THE HOUSE OF REPRESENTATIVES
May 23rd, 1870

Read and ordered to be printed.

By order,

M. Y. Kinn,
Chief Clerk

A. L. THOMPSON

OR

OYSTER CULTURE

THOM

PHILIP F. CARPENTER, B. A., F. R. S., HONORARY CURATOR
OF THE MUSEUM OF NATURAL HISTORY
MONTREAL, CANADA.

TO THE

President of the Academy of Natural Sciences

ANNALS

WM. THOMPSON, of R. F. F. F.

1870

A LETTER ON OYSTER CULTURE.

PEABODY INSTITUTE,

BALTIMORE, March 28, 1870.

Hon. F. C. Latrobe,

Speaker of the House of Delegates :

DEAR SIR :—I enclose a letter from Dr. Philip P. Carpenter, of Montreal, brother of the celebrated physiologist and microscopist, Dr. Wm. B. Carpenter of London, who gave some lectures in January last before this Institute, on the Oyster. Dr. Carpenter is one of the most learned conchologists in America. He came to this country some years ago, for the purpose of arranging the shells in the Smithsonian Institution at Washington. After finishing that work, which occupied him for several years, he fixed his residence in Montreal, Canada. His knowledge of the oyster is extensive, minute and accurate. He has made pisciculture an especial subject of study ; and is fully acquainted with the methods adopted in France and England, for the preservation and culture of the oyster. His lectures before the Institute were full of information on this subject ; and several persons present, among them Mr. Davidson, the Oyster Commissioner, were so impressed with the importance of more knowledge on this subject, that they urged Dr. Carpenter to write a letter that could be laid before the Legislature, which he consented to do. That letter he has just sent to me, and I forward it to you, hoping that you may be able to dispose of it in such a way as shall make its contents known to the Members of the Legislature and to the people of the State.

All the light that can be gained on this subject is needed before enlightened laws, for the protection of this great interest of the State, can be made ; and the views of a learned man, like Dr. Carpenter, who can speak with authority, are of

especial importance. I hope you will feel disposed to give it your favorable consideration, and will devise some method of presenting this communication to the Legislature, or of getting it before the people.

The blank in the address of the letter can be filled by "President" or "Provost" as you may think best. Mr. Kennedy is the President of the Institute.

I am my dear Sir,

Yours very truly,

N. H. MORISON,

Provost.

ON OYSTER CULTURE.

To the President of the Peabody Institute, Baltimore, Md. :

MONTREAL, Feb. 26th, 1870.

DEAR SIR:—I greatly regret that I have not been able earlier to fulfil my promise to write down a few of the results of European oyster culture, which I laid before you in the lectures which I had the honor to deliver at your Institute in January last. It is clear from the "Report of the Commissioners of Agriculture," published last year in Washington, and from the very interesting "Report on the Oyster Resources of Maryland," just presented by your State Commissioner, that this branch of the American fisheries is exciting a considerable amount of attention. It is desirable, therefore, to enquire in what directions industrial enterprise on the one hand, and legislative interference on the other, can be most profitably exerted.

According to both your authorities, the oyster-grounds of the Chesapeake, perhaps the richest beds of the finest oysters in the world, are in danger of destruction. According to your own Commissioner, the destruction is being caused not by the honest laborers, (the "Tongsmen,") but by the capitalists, (the "Dredgers.") The former class he would increase in every available way ; the latter he discountenances, and would put under the greatest possible restrictions.

Now all who study European modes of culture, must remember that the *dredge* of the English or French oystermen, and that of the Chesapeake capitalists, are two very different instruments, and apparently produce very opposite effects. The American dredges "keep up a grinding of 1,000 oysters to every one that is taken, thus crushing out the life of the young, and filling up the open mouths of all with the bottom." The European dredge acts somewhat like your tong, it "Touches the beds in one small spot, gathers on that spot alone, brings up nearly all it touches, and is not so heavy or so roughly used as to crush or injure either the young or old oyster."

Next, it must be borne in mind that the Chesapeake fishing is like *hunting* over the wild prairie ; whereas, the European culture is a species of *farming*. The dredgers and even the tongmen carry off all they can catch in a wild state ; London and Paris are supplied almost entirely from the well cultivated farms. Now we all know that a thousand acres will feed but few men on the products of the chase or wild fruits ; but a great many on pasturage, and many more from high cultivation. So the natural oyster-beds are being exhausted, while farms might be indefinitely extended, and made a source of constantly increasing wealth.

So long as you trust to what may be called *oyster-hunting* as opposed to *oyster-farming*, seeing that the wild waters (like the wild lands) are the property of the State, not of individuals, it is clearly for the public interest greatly to restrain, if not to forbid, the use of the eleven hundred *harrows*, (I adopt Mr. Davidson's name, in order to keep the word *dredge* for the comparatively harmless European instrument,) each weighing when full $1\frac{1}{2}$ cwt., dragged by vessels of 60 tons, night and day, under full sail. And, as it is the duty of good governments always to protect the weak against the strong, it is clearly your duty to protect the tongmen against the encroachments of the harrowing capitalists, so that they may enjoy the fruits of their honorable toil rather than that the profits be abolished by the men who hold the purse-strings. The proposals of your Commissioner ought therefore to be weighed with the greatest attention, as well as the wants and proposals of the tongmen themselves.

But while regulating the disputes between harrows and tongs, it becomes the Marylanders to consider whether they should not make special efforts to *cultivate* their oysters ; *i. e.*, to breed and fatten them for the market, as is done in France and England. In the old countries, but a very small part of the oysters consumed are from the natural banks ; the *native* (that is, the cultivated oyster) being far superior in flavor, and less encumbered by shell. The proportion of meat to shell is as 1 to 4 in the London native, but as 1 to 8 or 10 in the rough sea oyster, and as 1 to 20 in the coarse wild creatures of the Bay of Biscay. The ordinary price of the English sea-oyster is only \$3 a bushel, while the natives

fetch \$20 per bushel. It is clear therefore that farming *pays* much better than mere hunting.

An emigrant, turned loose on the virgin prairie, does not trust to the natural richness of the soil or abundance of game, but at once turns his attention to *farming*; so the oysterman turned loose on the waters of the Chesapeake, ought not to trust to the natural richness of the banks, but begin to farm, to breed, fatten and improve his oysters.

The French oyster culture has been very greatly praised, as vastly superior to the old English oyster, but both are founded on the same principles. Both have succeeded splendidly in favorable years; both have failed latterly from causes thus far unknown. Mr. Frank Buckland, who (next to Mr. Coste,) is the most enthusiastic oyster-culturist in the world, states in his report to the British Association, (Birmingham 1865,) that having examined both oysters on the spot, and tried each on the same ground in England, he cannot see any advantage in the French plans. In fact, so great has been their recent failure, that French agents are now in England buying up all the natives they can for the Paris markets.

The oyster supply in France and England appears to have failed latterly (*i. e.*, not to have equaled the demand) from circumstances over which man has no control. The best farming on land often fails from a succession of unfavorable seasons. We hear astonishing accounts of the fecundity of individual oysters, (one parent producing perhaps a million young in a single season,) and no wonder why, with all the care of the English and French oyster-farmers, the supply can ever fail. Yet, consider the *natural* history of these creatures before man interfere. At the million-fold rate of increase, the ocean would soon be crowded out; yet in fact, even Chesapeake Bay and Long Island Sound have not been inconveniently crowded, although the oyster may have begun to pile its banks thousands of years before the first man devoured them. Even an undisturbed oyster-bed is ages in growing. It is clear, therefore, that the bulk of infantile oysterlings are destined to an untimely death. The parent is ovoviviparous, and the young are born with a swimming pad, well fitted to "Paddle their own Canoe." It is found that they do *not* adhere to their parents' backs, but are de-

terminated to enjoy their brief sporting season, even if their adventurous spirit cost them their lives. Unless they fall in love with a good sticking place within two days, the whole million that the breeding oyster has sent forth on this swimming tour must inevitably perish. If a turn in the tide, or a change of wind, drive them out to sea, all are lost. Again, a sudden chill in the water may kill a whole nation of oyster babes. Once more, even if the brood be happily wedded to their fixtures, yet the shell-fish, star-fish and other creatures who do not keep "close time," and who specially delight in the flavor of oysterlings, (as some men do in sucking pigs,) may gobble them all up, and not leave one to be fried for a Baltimore Alderman.

It appears from Kroyer's official examination of the Danish beds, that even in favorable seasons, *not more than one oyster in ten* spawns at once. Perhaps the non-spawners are what the Commissioner of Agriculture calls the males; as the creatures have been proved to be hermaphrodite.

The two great problems of oyster culture are (1) how to fix the spat; and (2) how to fatten the oysters. These two things require different, and in some respects opposite conditions; and are therefore in Europe carried on in different places, and often by different sets of men. In France they are *nursed* in the *parks*, but educated in the muddy *claires*. In England the principal part of the spat (or brood) is derived from the natural beds, but they are transplanted to the preserves to be brought up as *natives*. The oysterling *will not stick to anything dirty*: mud, or even sand, is its abomination; sooner than soil its shelly skin, it prefers certain death! The adult oyster however rejoices in sandy mud at the embouchures of rivers; and fattens on the microscopic organisms which the soup (so to speak) of dirty places provides: that is, so long as the mud or sand do not get within the valves, which may smother oysters of the strongest constitution.

Wherever, therefore, it is desired that oysters should breed, the ground should be kept clean, and strewed with an abundance of culch or oyster shells, which are better than tiles, fascines, or any other known scientific appliance for fixing the spat. The ground should be well dredged (*not harrowed*)

to keep the culch from sand or dirt, to prevent weed from accumulating : and also to catch and destroy all the oyster's enemies. Even if a few oysterlings are killed by this operation, myriads are thus maintained in life, which would otherwise be either devoured or buried alive. In dredging over these grounds, every oyster, from say half an inch and upwards may be loosened from its attachment, and the culch and spat thrown back into the sea. The brood thus secured should be planted on the feeding grounds, where in a few years they can be tonged up for the market, with fat bodies and thin shells, and will command a higher price at less cost of production, than the wild oysters harrowed from the banks.

The fattening education can be best conducted in private grounds. Every facility which your laws can give to tongmen or other individuals to acquire property in shore ground should be cheerfully rendered, till your submarine acres are owned and farmed like the smiling fields above. Dredging in open boats on the public grounds will supply brood which can be sold at so much a bushel to the oyster farmers.

The enforcement of close time, which is so much recommended by your Commissioner, is open to grave objections. By convention between France and England, it is at present maintained in some districts, but left to the judgment of owners in others. The experiments thus far go to shew that under a well regulated system of farming, the owners are the best judges, and the laws do as much harm as good, perhaps more. On some of the best English beds, it is customary to dredge three days in each week, simply to clean the ground, destroy enemies, separate all double oysters, &c.; and dredge the other three days to supply the market. The men go on till they see the first spat fall, perhaps in July, and resume as soon as the spawning is over. The dredgers on the public banks stop during this season for their own interest, and because the owners of the private beds would then refuse to buy brood from them.

Those who wish to study the arguments on each side, would do well to peruse the "Report of the Commissioners appointed to enquire into the sea fisheries of the United Kingdom, 1866." The fishermen, who have their living to make out of the constant supply of oysters, as well as the owners of private

grounds, appear to be nearly unanimous in the opinion that the enforcement of close time would be fatal to the general prosperity.

I beg to submit the above simply as the results of my reading on the subject, without professing to have any practical knowledge ; and also, without having been able to ascertain whether the difference of species, or of climate, in the case of the American oyster, may render any part of the European experience inapplicable.

Yours respectfully,

PHILIP P. CARPENTER, B. A., Ph. D.
(Honorary Curator of Mollusca, in M'Gill College.)

